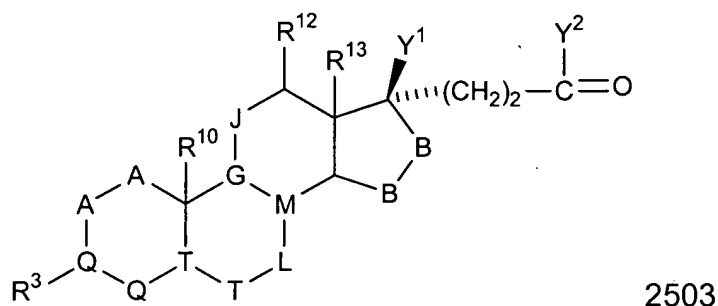


This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1.-50. cancelled

51. (currently amended) A process for the preparation of a compound corresponding to the Formula 2503:



wherein

**Y<sup>1</sup> and Y<sup>2</sup> together represent the oxygen bridge —O— or Y<sup>1</sup> represents hydroxy and Y<sup>2</sup> represents hydroxy alkoxy or O<sup>-</sup>;**

R<sup>3</sup> is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

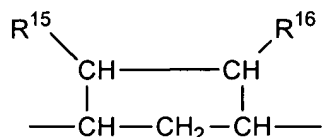
R<sup>10</sup>, R<sup>12</sup> and R<sup>13</sup> are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-A-A- represents the group -CHR<sup>1</sup>-CHR<sup>2</sup>- or -CR<sup>1</sup>=CR<sup>2</sup>-;

where R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxy carbonyl, acyloxyalkyl, cyano and aryloxy or R<sup>1</sup> and R<sup>2</sup> together with the carbons

of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

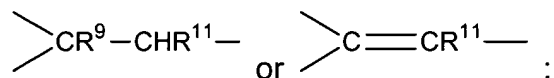
-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$ ,  $-\text{CR}^{15}=\text{CR}^{16}-$  or an  $\alpha$ - or  $\beta$ -oriented group:



where  $\text{R}^{15}$  and  $\text{R}^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

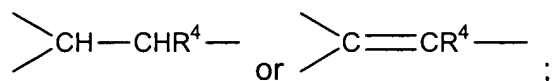
or  $\text{R}^{15}$  and  $\text{R}^{16}$ , together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-G-J- represents the group

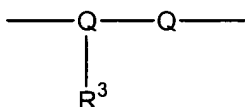


where  $\text{R}^9$  and  $\text{R}^{11}$  are independently selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

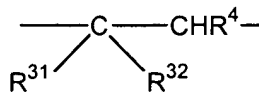
-Q-Q- represents the group



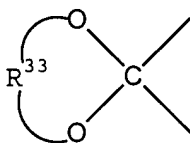
where  $\text{R}^4$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; or



together represent the group

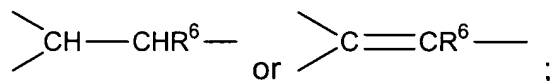


where  $\text{R}^{31}$  and  $\text{R}^{32}$  are independently selected from the group consisting of hydroxy and alkoxy, or  $\text{R}^{31}$ ,  $\text{R}^{32}$  and the C-3 carbon of the steroid nucleus to which they are attached form the group



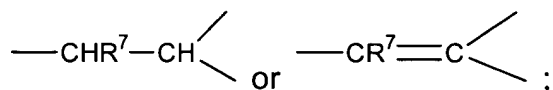
where  $\text{R}^{33}$  is **[a]** alkylene.

-T-T- represents the group



where  $\text{R}^6$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxy carbonyl, acyloxyalkyl, cyano and aryloxy; and

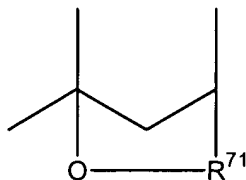
-L-M- represents the group



where  $\text{R}^7$  is selected from the group consisting of hydrogen, halo, hydroxy, protected hydroxy, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxy carbonyl, acyloxyalkyl, cyano, aryloxy, heteroaryl, heterocyclyl, acetylthio, furyl and substituted furyl;

or  $R^6$  and  $R^7$ , together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

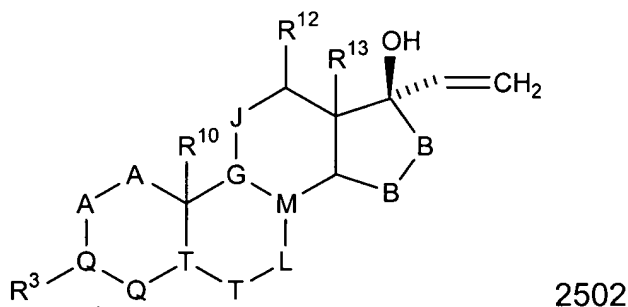
or  $R^5$  and  $R^7$ , together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein  $R^{71}$  comprises  $=CH(OH)$ ,  $=CH(OR^{72})$  or  $=CH=O$ ,

the process comprising:

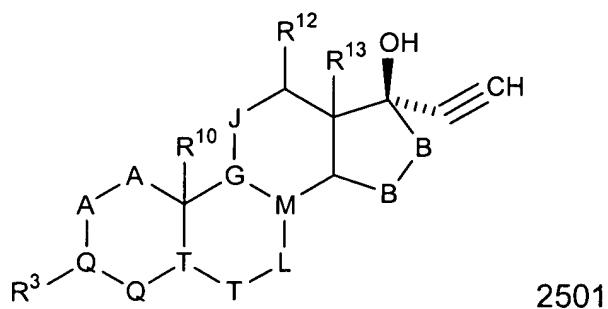
carbonylating a 17-vinyl-17-hydroxy steroid compound of Formula 2502:



where the substituents  $R^3$ ,  $R^{10}$ ,  $R^{12}$ ,  $R^{13}$ , -A-A-, -B-B-, -G-J-, -Q-Q-, -T-T- and -L-M- are as defined in Formula 2503

52. (original) A process as set forth in claim 51, wherein the process further comprises:

preparing the compound of Formula 2502 by reducing the 17-ethynyl group of a compound of Formula 2501 to a 17-vinyl group, said compound of Formula 2501 having the structure:



where the substituents  $R^3$ ,  $R^{10}$ ,  $R^{12}$ ,  $R^{13}$ , -A-A-, -B-B-, -G-J-, -Q-Q-, -T-T- and -L-M- are as defined above in Formula 2503.

53. (original) A process as set forth in claim 51 wherein said compound of Formula 2501 is contacted with a source of hydrogen in a hydrogenation reaction zone, thereby reducing the 17-ethynyl group and yielding an intermediate comprising the 17-vinyl compound corresponding to Formula 2502; and

the derivative of Formula 2502 is contacted with a source of carbon monoxide and a carbonylation catalyst in a carbonylation reaction zone to yield the product of Formula 2503.

54. (original) A process as set forth in claim 52 wherein said compound of Formula 2501 is contacted with a source of hydrogen in the presence of a catalyst.

55. (original) A process as set forth in claim 53 wherein said intermediate derivative of Formula 2502 is removed from said hydrogenation reaction zone and transferred to said carbonylation reaction zone.

56. (original) A process as set forth in claim 53 wherein said compound of Formula 2501 is simultaneously contacted with a source of hydrogen, a source of carbon monoxide and a catalyst system effective for reducing the 17-ethynyl group of the compound of Formula 2501 to a 17-vinyl group and for carbonylating the resulting derivative of Formula 2502 *in situ* to convert the 17-hydroxy-17-vinyl structure thereof to a 17-spirobutyrolactone structure.

57. (original) A process as set forth in claim 53 wherein the hydrogenation reaction is conducted in the presence of an alkene or cycloalkene.

58. (original) A process as set forth in claim 57 wherein said alkene or cycloalkene function as a solvent for said compound of Formula 2501.

59. (original) A process as set forth in claim 58 wherein said alkene or cycloalkene further functions as a solvent for said compound of Formula 2502.

60. (original) A process as set forth in claim 57 wherein said compound of Formula 2501 is simultaneously contacted with a source of hydrogen, a source of carbon monoxide and a catalyst system effective for reducing the 17-ethynyl group of the compound of Formula 2501 to a 17-vinyl group and for carbonylating the resulting derivative of Formula 2502 *in situ* to convert the 17-hydroxy-17-vinyl structure thereof to a 17-spirobutyrolactone structure; and said alkene or cycloalkene functions as a solvent for the product compound of Formula 2503.

61. (original) A process as set forth in claim 53 wherein the 17-ethynyl group is reduced to a 17-vinyl group in a hydrogenation reaction zone in the presence of a sacrificial hydrogenation target, thereby inhibiting the hydrogenation of the 17-vinyl group to a 17-ethyl group.

62. (original) A process as set forth in claim 53 wherein reduction of said 17-ethynyl group comprises contacting said compound of Formula 2501 with a source of hydrogen in the presence of a noble metal catalyst.

63. (original) A process as set forth in claim 62 wherein the catalyst comprises Pd on a calcium carbonate support.

64. (original) A process as set forth in claim 52 wherein hydrogenation of said 17-ethynyl group is conducted at a temperature of from about 0° to about 100°C.

65. (original) A process as set forth in claim 64 wherein said hydrogenation is conducted at a temperature of from about 25° to about 75°C.

66. (original) A process as set forth in claims 52 wherein hydrogenation of said 17-ethynyl group is conducted at a pressure of from about 0 to about 100 psig.

67. (original) A process as set forth in claim 66 wherein said hydrogenation is conducted at a pressure of from about 25 to about 50 psig.

68. (original) A process as set forth in claim 67 wherein the hydrogenation reaction is conducted in a solvent comprising a lower alcohol selected from the group consisting of methanol, ethanol and isopropanol.

69. (original) A process as set forth in claim 51 in which said carbonylation catalyst is formed by contacting a source of a metal with a source of carbon monoxide.

70. (original) A process as set forth in claim 69 wherein the carbonylation catalyst is formed by contacting the source of metal with a source of carbon monoxide in the presence of a ligand.

71. (original) A process as set forth in claim 69 wherein the carbonylation catalyst is formed in the presence of a reducing agent.

72. (original) A process as set forth in claim 69 wherein the carbonylation catalyst is formed *in situ* in the carbonylation reaction medium.

73. (original) A process as set forth in claim 69 wherein the carbonylation catalyst comprises a metal selected from the group consisting of Co, Ni, Fe, Pt, Pd, Ru, Rh, Ir and mixtures thereof.

74. (original) A process as set forth in claim 71 wherein said carbonylation catalyst is formed by contacting a source of Pd, a ligand and a reducing agent.

75. (original) A process as set forth in claim 71 wherein the ligand comprises phosphorus.

76. (original) A process as set forth in claim 70 wherein the reducing agent comprises an active hydrogen source.

77. (original) A process as set forth in claim 76 wherein the reducing agent is selected from the group consisting of hydrogen, formic acid, borohydrides and oxalic acid.

78. (original) A process as set forth in claim 77 wherein the reducing agent comprises formic acid.

79. (original) A process as set forth in claim 51 wherein said intermediate of Formula 2502 is contacted with carbon monoxide at a temperature of from about 80° to about 150°C.

80. (original) A process as set forth in claim 79 wherein said intermediate of Formula 2502 is contacted with carbon monoxide at a temperature of from about 100° to about 105°C.



81. (original) A process as set forth in claim 52 comprising:

contacting said compound of Formula 2501 with a source of hydrogen and a hydrogenation catalyst in a liquid reaction medium comprising a solvent, thereby producing a hydrogenation reaction mixture comprising a hydrogenation reaction solution comprising said intermediate of Formula 2502 in said solvent; and

mixing said hydrogenation reaction solution or a concentrate thereof with water to produce a liquid crystallization medium in which the solubility of said compound of Formula 2502 is lower than the solubility thereof in said solvent alone; and crystallizing said compound of Formula 2502.

82. (original) A process as set forth in claim 81 wherein said hydrogenation reaction solution or concentrate thereof is filtered for removal of catalyst prior to mixing thereof with water.

83. (original) A process as set forth in claim 51 in which said compound of Formula 2502 is contacted with a source of carbon monoxide and a carbonylation catalyst in a liquid reaction medium comprising a solvent for the compound of Formula 2502, thereby producing a carbonylation reaction mixture comprising a carbonylation reaction solution comprising said compound of Formula 2503.

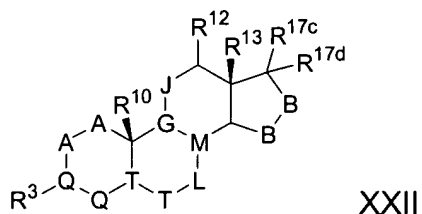
84. (original) A process as set forth in claim 83 wherein said product of Formula 2503 is recovered from a final crystallization medium comprising said carbonylation reaction solution or derived therefrom.

85. (original) A process as set forth in claim 84 wherein said carbonylation reaction solution is mixed with a solvent that is miscible with the liquid reaction medium but in which the solubility of said compound of Formula 2501 is lower than it is in the liquid reaction medium, resulting in crystallization of said compound of Formula 2501 from the resulting crystallization medium.

86. (original) A process as set forth in claim 84 wherein, prior to crystallization of said compound of Formula 2501, said carbonylation reaction solution or a concentrate thereof is filtered for removal of any solids contained therein.

87. (original) A process as set forth in claim 86 wherein solids removed by filtration from said carbonylation reaction solution or concentrate thereof are washed with a solvent which is combined with the filtrate prior to crystallization.

88. (original) A compound of Formula XXII:



wherein:

$R^3$  is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl;

$R^{10}$ ,  $R^{12}$ , and  $R^{13}$  are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

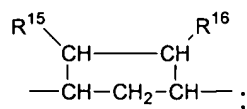
$R^{17c}$  is selected from the group consisting of hydroxy and protected hydroxy; and

$R^{17d}$  is alkenyl;

-A-A- represents the group  $-\text{CHR}^1-\text{CHR}^2-$  or  $-\text{CR}^1=\text{CR}^2-$ ;

where  $R^1$  and  $R^2$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or  $R^1$  and  $R^2$  together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$  or an  $\alpha$ - or  $\beta$ -oriented group:



where  $R^{15}$  and  $R^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

-G-J- represents the group  $\text{>C=CR}^{11}\text{—}$ ;

where  $R^{11}$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-Q-Q- represents the group  $\text{>C=CR}^4\text{—}$ ;

where  $R^4$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

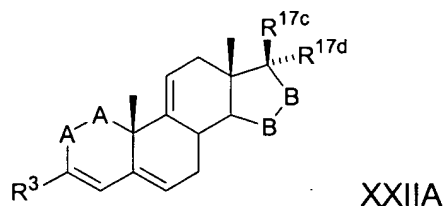
-T-T- represents the group  $\text{>C=CR}^6\text{—}$ ;

where  $R^6$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-L-M- represents the group  $\text{—CHR}^7\text{—CH<}$ ;

where  $R^7$  is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl.

89. (original) A compound according to claim 88 corresponding to Formula XXIIA:

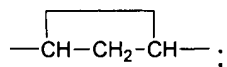


wherein

-A-A- represents the group  $\text{—CH}_2\text{—CH}_2\text{—}$  or  $\text{—CH=CH—}$ ;

R<sup>3</sup> is lower alkoxy;

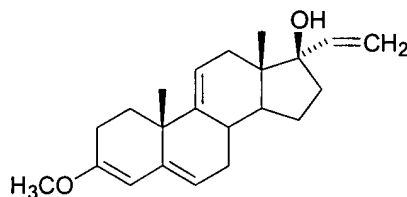
-B-B- represents the group -CH<sub>2</sub>-CH<sub>2</sub>- or an  $\alpha$ - or  $\beta$ -oriented group:



R<sup>17a</sup> is hydroxy or protected hydroxy; and

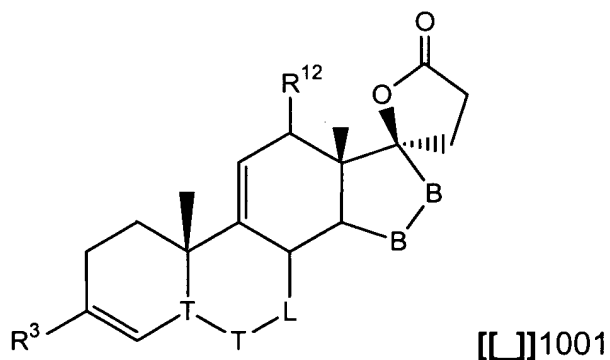
R<sup>17b</sup> is alkenyl.

90. (original) A compound according to claim 89 corresponding to Formula A:

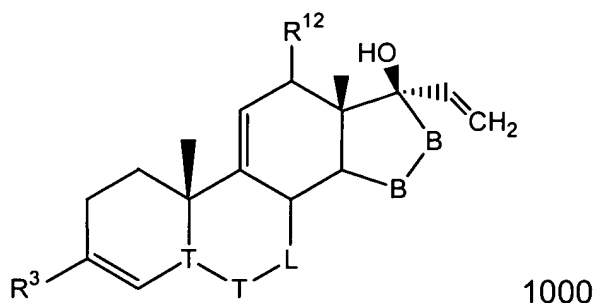


91. – 193. cancelled

194. (currently amended) A process for the preparation of a compound corresponding to Formula 1001:



the process comprising carbonylating a 17-vinyl-17-hydroxy steroid compound of Formula 1000:

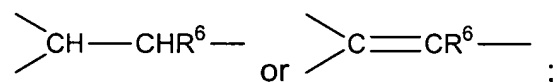


wherein

$R^3$  is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

$R^{12}$  is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-T-T- represents the group



where  $R^6$  is hydrogen;

-T-L- represents the group  $-\text{CHR}^6-\text{CHR}^7-$ ; where  $R^6$  is hydrogen;

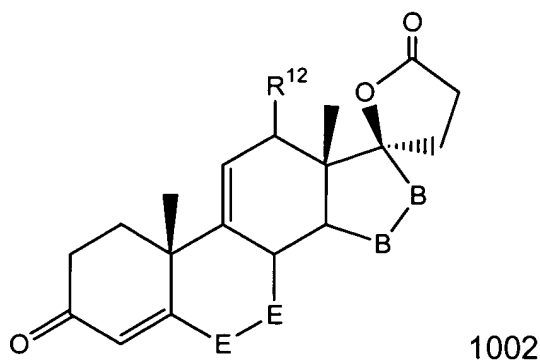
where  $R^7$  is selected from the group consisting of hydrogen and acetylthio;

or  $R^6$  and  $R^7$ , together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$ ; where  $R^{15}$  and  $R^{16}$  are hydrogen;

or  $R^{15}$  and  $R^{16}$ , together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

195. (original) The process of claim 194 further comprising the preparation of a compound corresponding to Formula 1002:



where

$R^{12}$  is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-E-E- represents the group  $-\text{CHR}^6-\text{CHR}^7-$ ; where  $R^6$  is hydrogen;

where  $R^7$  is selected from the group consisting of hydrogen and acetylthio;

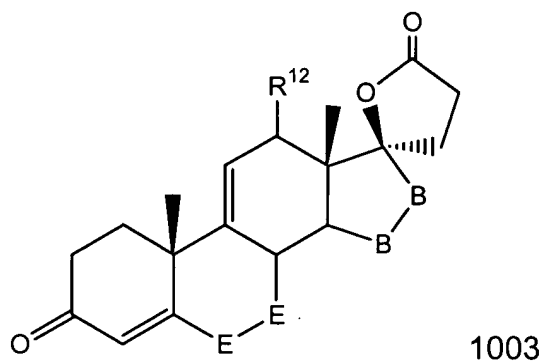
or  $R^6$  and  $R^7$ , together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$ ; where  $R^{15}$  and  $R^{16}$  are hydrogen;

or  $R^{15}$  and  $R^{16}$ , together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

the process comprising oxidizing a steroid compound of Formula 1001.

196. (currently amended) The process of claim 195 further comprising the preparation of a compound of Formula 1003:



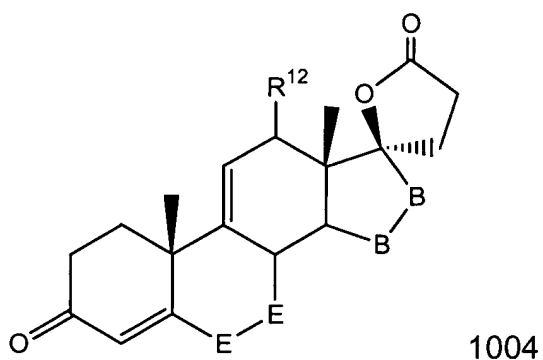
where

$R^7$  is selected from the group consisting of furyl, alkylfuryl, thienyl, and alkylthienyl;

the process comprising contacting a compound of Formula 1002 where  $R^7$  is hydrogen, with furan, alkylfuran, thiophene or alkylthiophene;

$R^{12}$ , -E-E- and -B-B- are defined as in Formula 1002 above.

197. (currently amended) The process of claim 196 further comprising preparation of a compound of Formula 1004:



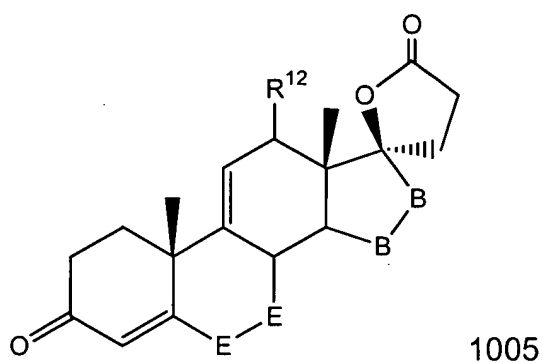
where

$R^7$  is  $-\text{C}(\text{O})\text{OH}$ ;

the process comprising contacting the compound of formula 1003 where R<sup>7</sup> is selected from the group consisting of furyl, alkylfuryl, thienyl, and alkylthienyl; with an oxidizing agent and an ozonolysis agent;

R<sup>12</sup>, -E-E- and -B-B- are defined as in Formula 1003 above.

198. (currently amended) The process of claim 197 further comprising the preparation of a compound of Formula 1005:



where

$R^7$  is  $-C(O)OR^{71}$ ;

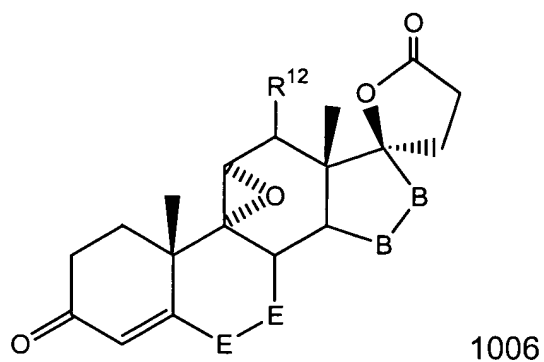
R<sup>71</sup> is an alkyl group;

the process comprising esterifying a 7-carboxyl steroid compound of Formula 1004 where R<sup>7</sup> is  $-\text{C}(\text{O})\text{OH}$ ;

$R^{12}$ , -E-E- and -B-B- are defined as in Formula 1004 above.

199. (currently amended) The process of claim 198 further comprising preparation of a compound of Formula 1006

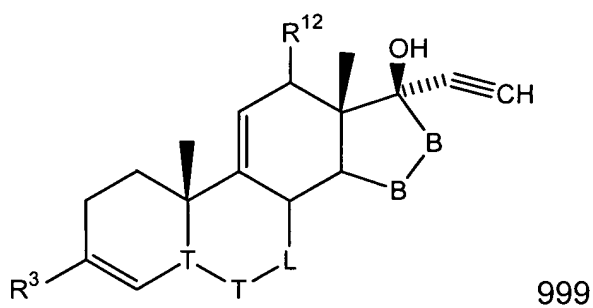




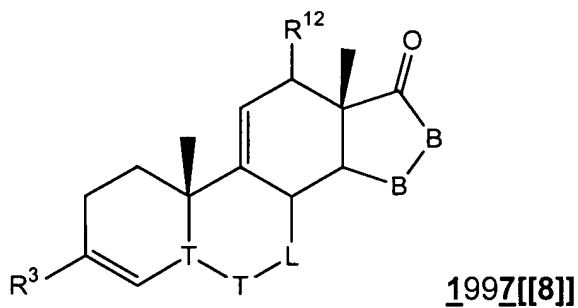
$R^{12}$ , -B-B- and -E-E are defined as in Formula 1005 above;

the process comprising contacting the compound of Formula 1005 with an epoxidation agent.

200. (currently amended) The process of claim 199 further comprising preparation of a compound of Formula 999:



the process comprising ethynylating a 17-keto steroid compound of Formula 1997:



where  $R^3$ ,  $R^{12}$ , -T-T-, -T-L- and -B-B- are as defined in Formula 1001.

201. (original) The process of claim 200 further comprising preparation of a compound of Formula 1000, the process comprising hydrogenating a compound of Formula 999.